

Parent Involvement and Mathematics Achievement: Contrast Across Racial and Ethnic Groups

WENFAN YAN

Indiana University of Pennsylvania

QIUYUN LIN

Mount Aloysius College, Pennsylvania

ABSTRACT The authors examined the relationships of 3 dimensions of parent involvement (family obligations, family norms, and parent information networks) to 12th-grade students' mathematics achievement and ways in which these relationships varied across 4 racial and ethnic groups (i.e., Caucasians, African Americans, Hispanics, and Asians). Using 4-year longitudinal data from the National Education Longitudinal Study:1988 (NELS:88), the authors factor analyzed 39 parent involvement variables to create 9 composites, whose relationship to 12th graders' mathematics scores were assessed with ordinary least squares regression. Findings indicate that parent involvement as a form of social capital was generally a salient indicator for explaining the mathematics achievement of the Caucasian students. Close parent-teenager relationship was 1 of the major ways in which minority (except Hispanic) families positively influenced the senior mathematics outcome. Regardless of racial or ethnic background, educational expectation had the strongest positive effect on 12th graders' mathematics achievement.

Key words: adolescent mathematics achievement, parent involvement, race and ethnicity, social capital

Parent involvement, as a family educational input, has been advocated as a resource for school success in recent research and policy literature in the United States (Heystek, 2003; Hoover-Dempsey, Bassler, & Burrow, 1995; Schneider & Coleman, 1993; Weiss et al., 2003). Although some occasional disagreements do appear (Casanova, 1996; de Carvalho, 2001; Henry, 1996; Smrekar, 1996), a growing body of evidence has emerged that suggests that involving parents in the education process enhances school success (Feuerstein, 2000; Jeynes, 2003; López, Scribner, & Mahitivanichcha, 2001; McNeal, 1999; Sheldon, 2003; Trusty, 1998).

Research indicates that educators benefit as a result of increased parent involvement: (a) teachers gain confidence in their efficacy to teach children (Hoover-Dempsey, Bassler & Brissie, 1987), (b) curriculum is transformed as teachers build on community "funds of knowledge" (Moll, 1992), (c) administrators strengthen community relations as they interact with parents on a personal basis (Henderson, Marburger,

& Ooms, 1986; Heystek, 2003), and (d) schools become more collaborative and caring in nature when they work with the community at large (Henry, 1996). In her synthesis of research on parent involvement, Epstein (1992) pointed out that "students at all grade levels do better academic work and have more positive school attitudes, higher aspirations, and other positive behaviors if they have parents who are aware, knowledgeable, encouraging, and involved" (p. 1141).

Parent Involvement as a Form of Social Capital

Parent involvement has been conceptualized as a form of social capital (Coleman, 1988, 1992). *Social capital* consists of social networks and connections—"contacts and group memberships which, through the accumulation of exchanges, obligations and shared identities, provide actual or potential support and access to valued resources" (Bourdieu, 1993, p. 143). According to Coleman (1997), social capital is generated from the strength of relationships between adults and children; such relationships may be especially important to adolescents who often require adult guidance and assistance to perform important developmental tasks.

In recent years, social capital has become a popular concept within the field of education research and has been further defined and used in many ways, such as through social networks and resources (e.g., Stanton-Salazar, 1997, 2001); social reproduction (e.g., Lareau & Horvat, 1999); and social support, trust, and reciprocity (e.g., Croninger & Lee, 2001; Hao & Bonstead-Bruns, 1998; Parcel & Dufur, 2001). Regardless of the differences in terms and definitions, three common elements seem to be present when one conceptualizes parent involvement: (a) family obligation, (b) parent information network, and (c) family norm.

Address correspondence to Wenfan Yan, Department of Professional Studies, Indiana University of Pennsylvania, Indiana, PA 15705. (E-mail: wyan@iup.edu) or Qiuyun Lin, Department of Elementary/Early Education, Mount Aloysius College, Cresson, PA 16630. (E-mail: qlin@mtaloy.edu)

Family obligation refers to a family's responsibility to adopt certain norms to advance children's life chances (Coleman, 1988), such as (a) participating in parent-teacher organizations, (b) attending school programs for teenagers' future planning, and (c) discussing school topics. *Family obligation* is related to parents' intensive investment in the well-being of the school outcome in particular and the value of education in general. Parent information network refers to the social ties and relations involving dyadic relationships between parent and child, parent and teacher, or between parents, including (a) contacting school about teenagers' performance or behavior, (b) knowing teenagers' schoolwork, and (c) knowing about teenagers' parents.

Parent information network is a key mechanism in adolescent development because of the shared information that extended parent networks allow. The networks or ties—the dimensions of structural forms—provide substantial amounts of social capital to individual members of the network (Dika & Singh, 2002; Lareau, 2001). *Family norm* is associated with a sense of trust, obligation, or reciprocity based on kinship¹ (McNeal, 1999). Such kinship base allows one to more easily discuss the norms of obligation and reciprocity inherent in parent-child relations (Coleman, 1988). Examples of family norm include family rules, educational expectations, and parent-teenager relationships. In American society, the norm of investing in a child's development and education is well established, and the potential sanction for not abiding by the social norm of caring for a child may vary from a loss of social ties with friends and relatives to imprisonment (McNeal). Darling and Steinberg (1993) claimed that a supportive parent-teenager relationship not only establishes the emotional climate in a family but also conveys parents' attitudes to children across a wide range of situations.

Dimensions of Parent Involvement

Family Obligations

Participation in Parent-Teacher Organization (PTO) activities. Findings concerning PTO involvement are mixed, ranging from no apparent effect (Muller, 1995) to statistically significant influence at the aggregate level (Sui-Chu & Willms, 1996). Using 179 children (aged 5–17 years), parents, and teachers drawn from the Time Use Longitudinal Panel Study, Stevenson and Baker (1987) examined the relationship between parent involvement and children's school performance. They found that children of parents who were more involved in school activities (e.g., parents who attended parent-teacher organizations and parent-teacher conferences) performed better in school than did children with parents who were less involved. One limitation regarding Stevenson and Baker's study, however, is the small sample size. That limitation was compensated partly by McNeal (1999) who used large-scale national data from the National Education Longitudinal

Study:1988 (NELS:88) to examine the relationship between PTO involvement and achievement. The large sample allowed the author to conclude that PTO involvement had little to do with academic achievement, at least when conceptualized as science achievement. One caveat to McNeal's finding, however, is that the study addressed only science achievement; PTO participation as a form of social capital might have had a different effect on other forms of achievement, such as mathematics.

Attendance at high school programs and discussions of school topics. Few studies relate to attendance at high school programs and achievement but many relate to discussions of school topics. Researchers have reported that the degree to which parents and teenagers actively engage in conversations about education is associated positively with achievement (Desimone, 1999; Muller, 1993). However, findings are mixed when different student backgrounds are considered. Ma (1997) examined age differences in home discussion and found that home discussion had no effect on mathematics achievement in Grade 8, but it affected mathematics achievement in Grades 10 and 11. Using base-year data of NELS:88, Sui-Chu and Willms (1996) found that discussions of school topics had the strongest relationship with 8th graders' reading and mathematics performance. Using the same data, Pong (1997) found that parents' knowledge of teenagers' schoolwork and discussions of school matters with their children had the greatest influence on 8th graders' reading and mathematics scores. Eighth-grade students who lived with two biological parents reported more discussion with parents about school matters than did 8th graders from either single-parent families or stepfamilies. When considering race and ethnicity, Schneider and Coleman (1993) found that Asians had lower levels of home discussion than did Caucasians. The differences between Hispanics and Caucasians were relatively small. In contrast, the authors found that African American parents talked about high school program planning at the highest rate and that Caucasian parents talked about current experiences at a higher rate than any of the other minority groups.

Parent Information Networks

Contact with school regarding teenagers' performance. In general, parents' contacting school about their children's behavior may be an important aspect of monitoring (Scott-Jones, 1995). However, research shows a negative association with parents' contacting school about teenagers' performance and achievement, probably because of the negative association between test scores and unmeasured behavioral problems (Muller, 1993). Muller (1998) and Sui-Chu and Willms (1996) found that when gender was considered, parents had more contact with school staff regarding boys' experiences at school probably because their sons experienced more school-related behavioral problems. In regard to racial

and ethnic differences, the negative relationship between grades and contacting parents about academic performance was most pronounced for Caucasians (Desimone, 1999). Hispanic parents had a profile similar to African American parents, although not as pronounced (Muller, 1993); Asian American parents showed lower levels of contact across all grade levels with relatively high contact rates only if children exhibited extremely low grades (Desimone). Thus, although those researchers emphasized the negative relationship between grades and contact with school, the effects varied greatly according to racial and ethnic backgrounds.

Knowledge of teenagers' parents and teenagers' schoolwork. In several studies, researchers used NELS:88 data to examine relationships between parents who knew the parents of their teenagers' friends and student achievement. Using NELS:88 statistics, Muller (1993) reported that Caucasian parents of eighth graders were more likely than were parents in other ethnic groups to know the parents of their children's friends; for each subgroup, knowing teenagers' parents correlated with parents' level of education. As minority parents' level of education increased, so did their number of acquaintances with other parents, but the number never approached the level of acquaintances that Caucasian parents had. Following Muller's study, several researchers further explored the relationship between parent acquaintances and student achievement. The acquaintances and communications between parents positively influenced student performance in Pong's study (1997) but were associated negatively with achievement in Morgan and Sorensen's research (1999).

Morgan and Sorensen (1999) examined Coleman's (1990) explanation for why children in Catholic schools outperform children in public schools. In their analysis, Morgan and Sorensen found that for public schools, social closure (i.e., social network) among parents related negatively with achievement gains in mathematics and the number of friends that teenagers have. That study provoked several debates. Carbonaro (1999) conducted an analysis of Coleman's explanation with the same data that Morgan and Sorensen used, yet Carbonaro reached different conclusions. Similarly, Hallinan and Kubitschek (1999) raised similar concerns over the conceptualization and measurement issues in Morgan and Sorensen's study.

Family Norms

Family rules. Theoretically, family rules should affect adolescent behavior and development (Coleman, 1988; Coleman & Hoffer, 1987) but educators still are not clear on how this occurs. Fehemann, Keith, and Reimers (1987) suggested that more focused home supervision and family rules that increase homework time, restrict TV, and so forth might improve grades. Nevertheless, Keith and Lichtman (1992), for example, found that family rules do not affect students' academic achievement.

When examining racial and ethnic differences, Sui-Chu and Willms (1996) found that Asians and Hispanics tended to have more family rules and restrictions than did Caucasians. Desimone (1999) separated family rules into student-reported and parent-reported rules. For Caucasians and Asians, her results show that the relationship was negative for parent-reported rules, whereas the relationship was positive for student-reported rules. For African Americans and Hispanics, however, the composite family rule (whether student- or parent-reported) was negative. Those results suggest that the relationship between family norm and student achievement is complicated and varies among different ethnic groups.

Educational expectations. Typically, educational aspirations have been measured by asking parents and students how much education parents expect their children to complete. Numerous studies have documented the powerful relationship between parents' educational expectations and student achievement (Goyette & Xie, 1999; Hanson, 1994; Hao & Bonstead-Bruns, 1998; Singh et al., 1995; Trusty, 1996, 1998, 2002; Trusty & Harris, 1999; Trusty, Plata, & Salazar, 2003). For example, based on Bandura's (1977) self-efficacy theory, Trusty (2000) used 6-year longitudinal data from NELS:88 to find in his study of stability-of-education goals that parents' aspirations and efficacy influence their teenagers' academic self-efficacy, which, in turn, affects the teenagers' long-term educational attainment. However, in regard to racial and ethnic differences, findings were less conclusive. A popular belief remains that immigrant parents have higher educational expectations for their children than do native parents and that these expectations translate into their children's greater educational achievement. For example, several researchers (Chen & Stevenson, 1995; Hao & Bonstead-Bruns, 1998; Goyette & Xie, 1999) stated that cultural beliefs about the connection between effort and educational success may account for high educational achievement among Asian American children.

Parent-teenager relationships. According to social capital framework, parents can foster positive relationships with their children that reinforce school learning at home and provide opportunities, encouragement, and emotional support for children's ongoing education (Coleman, 1992, 1997; Croninger & Lee, 2001; Hao & Bonstead-Bruns, 1998; Lareau & Horvat, 1999; Parcel & Dufur, 2001; Stanton-Salazar, 1997, 2001). When such a relationship is present, expectations of parents and children are more likely to increase and agree with each other, benefiting the children's academic achievement (Coleman, 1988). Conversely, Eccles and Harold (1996) reported that whether parents trust children to do what parents expect and whether parents and teenagers get along with each other can affect parent involvement. Parents may be more likely to continue trying to help a child with whom they get along than to help a child with whom they have many conflicts. Hao and Bonstead-Bruns (1998) further established the association

between parent-child relationships and child achievement. They confirmed that parent-child interactions in learning activities are a form of within-family social capital that strengthens the parent-child bond (i.e., a higher level of communication and understanding between parents and children). It seems clear that parent-teenager relationships, like parents' expectations, have positive relationships with teenagers' academic achievement. What is less clear, similar to parent expectations, are racial and ethnic differences in parent-teenager relationships.

Racial and Ethnic Differences as a Form of Social Capital

Racial and ethnic differences in cultural norms and values also can be considered as a form of social capital (Coleman, 1988). Coleman suggested that norms for academic success, and thus, levels of parent involvement, may vary among racial and ethnic groups. For instance, he noted the case of an Asian American parent who bought two textbooks—one for himself and one for the child. Apart from norms for success, however, parents from some racial and ethnic groups may not feel comfortable communicating with teachers or participating in school activities because of language barriers or differences in cultural values (Lareau & Horvat, 1999). Therefore, parent involvement analyses should consider racial and ethnic variations to understand the impact of race and ethnicity on parent involvement and student achievement. A 1-year case study (Péna, 2000) of Mexican parents in an elementary school in Texas demonstrated that minority parent involvement was influenced by several factors, including language, parent cliques, parents' education, attitudes of school staff, cultural influences, and family issues. Beliefs exist that minority parents choose not to participate or that they cannot participate in school-family relationships because of differences in language or limited education (Lareau, 2001).

Caucasian students. In recent years, scholarly and lay publications have documented a trend indicating that the mathematics performance of North American students is lower than that of students in other countries, particularly Asian countries. What could be contributing to the differences? Stevenson, Chen, and Uttal (1990) found no evidence that American children had lower intellectual levels; however, there were marked differences in parents' beliefs, their reported activities with their children, and their evaluations of their children and their education systems. One explanation given by Stevenson and colleagues was that American mothers are less likely to be actively involved in helping their children with homework than are mothers in other groups. American mothers tend to emphasize the role of innate ability in school performance rather than the role of effort. Also, Stevenson, Chen, and Lee (1993) found that American mothers appeared to be more interested in their children's general cognitive development than in their academic achievement per se by

attempting to provide their children with experiences that fostered cognitive growth. Those mothers reported reading more frequently to their young children, taking them on excursions, and accompanying them to more cultural events than did Chinese or Japanese parents. However, because those studies were conducted on young children, we still are not clear how different patterns of parent involvement may affect the mathematics achievement of junior and senior high school students.

African American students. Academic underachievement among African American youths is a social concern that has reached disturbing proportions (Ensminger & Slusarcick, 1992); nevertheless, satisfactory explanations continue to elude educators and social scientists (Hedges & Nowell, 1999). Moles (1993) found that low-income African American parents often have high expectations for their children and want to be involved with their children's schoolwork. In a qualitative study of high-achieving African American students from urban areas, Sanders (1997) reported that efforts of African American parents to promote their children's positive racial and ethnic socialization help promote the latter's academic success as a response to racism and discrimination. By using national representative data, Yan (2000) found similarly that parent involvement, used as a form of social capital, distinguishes between successful African American students and their unsuccessful peers. However, some researchers doubt that family influences can be as powerful an explanation for African American children as it is for other minority children (Mickelson, 1990; Steinberg, Dornbusch, & Brown, 1992).

Hispanic American students. Hispanic Americans represent one of the largest and fastest growing minority groups in the United States (Paratore & Hindin, 1999). Using parent involvement as a means to boost the achievement of Hispanic American students has been a major education policy interest (Hao & Bonstead-Brun, 1998; Rodríguez-Brown, Li, & Albom, 1999). In a 2-year qualitative study of Hispanic parent participation in a family literacy program, Rodríguez-Brown and colleagues revealed that a strategy such as Project FLAME can (a) increase Hispanic parents' ability to provide literacy opportunities for their children, (b) increase parents' ability to act as positive role models, and (c) improve parents' skills as well as relationships between Hispanic families and schools. However, findings regarding the involvement of Hispanic American parents are mixed. When compared with European American and African American parents, researchers found that the Hispanic parents were less involved in their children's education (e.g., Klimes-Dougan, López, Nelson, & Adelman, 1992). Low levels of parent involvement occurred even when Hispanic parents reported positive attitudes toward school involvement (Hao & Bonstead-Brun; Moles, 1993).

In other studies, however, Spanish-speaking parents were not only concerned about their child's education but also wanted to assume an active role in the education process (Chavkin & William, 1993; Raffaele & Knoff,

1999). Chavkin and Williams surveyed 506 Hispanic parents across six southwestern states and found that over 90% of them wanted to help their children at home with school work or with other educational activities; the parents supported their children by attending school performances, open houses, and so forth. Despite limited English proficiency, low levels of education, and few economic resources, when provided with opportunities to learn from and collaborate with teachers, all Hispanic parents who participated in Paratore and Hindin's (1999) study were willing and able to do so consistently and effectively. Those studies present different profiles of Hispanic parents.

Asian American students. Among minorities, Asian Americans have been regarded as a "model minority" (Hurh & Kim, 1989; Kao, 1995), although support for this image ranges from full acceptance to complete dismissal because of the striking differences within the Asian population. For example, in a study that compared several Asian subgroups with Caucasian subgroups, Kao (1995) found no clear "Asian advantage" in test scores after controlling for educational aspirations. Despite the disagreement over Asian advantage in academic achievement, many researchers agree that Asian American families perceive that education is the best route to upward mobility (e.g., Chen & Stevenson, 1995; Schneider & Lee, 1990) and that the child's school success is a prime goal of parenting (Lee, 1993).

Among the factors examined that might contribute to Asian American students' success, researchers have identified high parent aspiration as an important factor that leads to Asian students' academic success. In an attempt to explain why east Asians succeed in school, Schneider and Lee (1990) conducted a field-based ethnographic study of two public schools. From an academic perspective, the findings were positive: Asians students do well in school because "their parents expect it, their teachers expect it, and their peers expect it" (p. 374). Also, using NELS:88 data, several researchers (Goyette & Xie, 1999; Hao & Bonstead-Bruns, 1998; Kao, 1995; Mau, 1997) measured parents' and children's aspirations across several Asian subgroups and other races and ethnicities. The findings were similar: Asian parents' high expectations for their adolescents' educational development affect their children's academic performance, and their children's academic performance, in turn, positively influences Asian parents' long-term educational expectations.

Need for the Study

Having reviewed the previous findings regarding the effects of the three dimensions of parent involvement and the way that involvements vary according to students' racial and ethnic background, the degree of inconsistency between previous studies and their conclusions is immediately apparent. The first obvious limitation is the clear inconsistencies surrounding the effect of involvement on student outcomes. The second limitation relates to the lack

of studies in which researchers use 12th-grade mathematics as a measure of achievement (while controlling for 8th-grade mathematics). Epstein (1991) raised a sound hypothesis that although gains are higher for some achievement tests, such as reading, that is not the case for mathematics; nevertheless, she has not set out to test this hypothesis empirically. The third limitation lies in the scarcity of research that accounted for group variations in parent involvement by race and ethnicity. Most of the large-scale quantitative studies in which researchers examined the relationship between parent involvement and students' achievement employ race and ethnicity as a control variable rather than as a central concern (e.g., Sui-Chu & Willms, 1996; Trusty, 2000). The fourth limitation concerns the method that researchers use. Studies that report qualitative methods or quantitative experimental methods are limited by their sample size for better generalizations (e.g., Rodríguez-Brown, Li, & Albom, 1999; Schneider & Lee, 1990). Similarly, many difficulties exist when researchers set up large-scale experimental research that compares the mathematics achievement of racial and ethnic groups that receive parent involvement treatment with those that do not.

A large-scale national data study such as NELS:88 may offset the limitations. However, in most of the previous studies that employ NELS data, researchers used cross-sectional samples of 8th graders (e.g., Desimone, 1999; Hao & Bonstead-Bruns, 1998; Pong, 1997; Singh et al., 1995; Sui-Chu & Willms, 1996) or 10th graders (e.g., Goyette & Xie, 1999; Mau, 1997); few studies included all rounds of the NELS data (except Trusty, 1998). For example, Desimone (1999) examined the relationship between differential effects of parent involvement on student achievement and the way that the effects vary for students from disparate racial, ethnic, and economic backgrounds. Yet, she used only the base-year, cross-sectional data of the 8th graders studied in NELS:88. The limitation regarding the use of base-year data is that important variables (such as the earlier academic achievement scores) could not be controlled.

One can readily address the limitations noted in the previous paragraphs by (a) use of longitudinal data expanding from 8th to 12th grade, (b) better conceptualization of parent involvement based on social capital theory, and (c) further differentiation of involvement practices and their effects, particularly among various racial and ethnic groups. Thus, our purpose in this study was to illustrate the complexity of the focus on parent involvement as a strategy for enhancing school outcomes by empirically testing the predictive ability of three components of parent involvement on 12th graders' mathematics achievement by race and ethnicity. We focused on two questions:

1. What types of parent involvement are associated with 12th graders' mathematics achievement?
2. How do different practices of parent involvement vary according to a student's racial and ethnic background?

Method

Data Source

We used data from the NELS:88, which was based on a sample of 24,599 eighth-grade students and their parents and teachers. We used the longitudinal data extracted from the student and parent questionnaire in base-year, first follow-up, and second follow-up data, respectively. Complete information was available for 19,386 students on all variables. We included weights to correct for oversampling of policy-relevant strata, such as schools with disproportionate numbers of Asians and Hispanics (Ingels et al., 1990). The NELS survey data was particularly suitable for our study because it provided broad coverage of many types of family involvement, which allowed us to study the occurrences and patterns of parent involvement from middle to high school years.

Measure

The three dimensions of parent involvement, namely, family obligations, parent information networks, and family norms were the major independent variables in this study. We drew each of the three constructs from factor analysis made up of several individual indicators. In the first construct, *family obligation*, we examine parents' obligation to perform duties that would invest in a child's development and build a level of trust, such as (a) participating in PTO activities, (b) attending high school programs, and (c) discussing school topics.

In the second construct, *parent information networks*, we examine the amount of information and the social ties that parents had regarding their teenagers and their teenagers' friends; friends' parents and teenagers' teachers, programs, and schoolwork. We also investigated parents' contacting school about teenagers' performance or behavior, knowing teenagers' school experience and future plans, and knowing about teenagers' parents. The third construct, *family norms*, includes three composites that ask how parents structure the child's environment so that it is conducive to learning (i.e., family rules), the nature of parents' values in education (i.e., parents' expectations), and the ways in which parents interact with the child (i.e., parent-teenager relationship). The dependent variable in this study was 12th-grade mathematics achievement.

Analysis

The analysis for this study has three distinct components. First, we used principal component factor analysis with a varimax rotation and extracted the weighted factor scores. The analysis yielded nine distinct factors that were then grouped into three components according to social capital theory (Coleman, 1988): (a) family obligations, (b)

parent information networks, and (c) family norms. Table 1 shows the resulting factors, percentages of variance explained, eigenvalues, and alpha reliability coefficients. Second, we provided a descriptive statistics to depict all the dependent and independent variables used in the study. Finally, we conducted a series of ordinary least squares (OLS) regressions while controlling for several adolescent family and individual characteristics such as female, eighth-grade mathematics, family income, and parent education. All regression models used relative weights to account for the potential design effects and oversampling issues.

Results

Family Backgrounds and Social Capitals

Table 2 shows the means and standard deviations of all parent-involvement composites and background variables that we used in this study. In respect to family income and parent education, the magnitudes of the effect sizes ranged from medium to large. To be specific, there were statistically significant differences in parent education ($ES = .58$) and family income ($ES = .81$) between Caucasian and Hispanic students; there also were statistically significant differences in parent education ($ES = .45$) and family income ($ES = .96$) between African American students and Caucasian students. Those statistics suggest that an inequality in family background existed between the minority (except Asian Americans) and Caucasian students. Consistent with previous research, members of various minority groups possess different amounts and kinds of resources in American society.

Among the parent involvement variables, statistically significant differences existed between Caucasian families and minorities. Caucasian parents seemed to engage more in their children's schooling (standardized factor scores were all above or close to zero or above average) than did the other three minority groups. African American parents had a high frequency of contacting school about their teenagers' performance; African American and Hispanic American parents reported having more strict family rules than did Caucasian parents. The factor scores of education expectations of Asian American students ($M = .22$, $SD = .90$) were the highest of all the factor scores in Table 2, suggesting that Asian American parents had the highest expectations for their children's educational achievements.

The means of mathematics scores showed that all racial and ethnic groups had a statistically significant gain in mathematics scores from 8th to 12th grade. Asian students had the highest mathematics achievement, and Caucasian students scored higher than did Hispanic and African American students. Compared with Caucasian students, Hispanic and African American students had lower 8th- and 12th-grade mathematics achievement.

TABLE 1. Survey Items and Composites for Family Obligations, Parent Information Networks, and Family Norms

Parent-involvement variable	Description
Family obligations	
<i>Participation in Parent–Teacher Organization activities</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 2.22 and explains 55.5% of variance ($\alpha = .73$).
BYP59A Belong to Parent–Teacher Organization	
BYP59B Attend Parent–Teacher Organization activities	
BYP59C Take part in Parent–Teacher Organization activities	
BYP59D Act as a volunteer at the school	
<i>Attendance at school programs about teenager's future planning</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 1.84 and explains 61.5% of variance ($\alpha = .69$).
F2P45A Educational opportunities after high school	
F2P45B College financial aid	
F2P45C Employment opportunities	
<i>Discussions with teenagers about school topics</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 3.03 and explains 50.4% of variance ($\alpha = .80$).
F2P49A Selecting courses	
F2P49B School activities	
F2P49C Things studied in class	
F2P49D Teenager's grades	
F2P49E Plans to take SAT/ACT	
F2P49F Applying to colleges	
Parent information networks	
<i>Contact with school about teenager's performance</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 2.50 and explains 62.5% of variance ($\alpha = .80$).
F2P44A Academic performance	
F2P44B Academic program	
F2P44C Teenager's plans after high school	
F2P44D College course selection	
<i>Contact with school about student's behavior</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 1.44 and explains 72.3% of variance ($\alpha = .61$).
F2P44E Teenager's attendance	
F2P44F Teenager's behavior	
<i>Knowledge of teenager's schoolwork</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 2.08 and explains 52% of variance ($\alpha = .68$).
F2P46A Which courses teenager is taking	
F2P46B How well teenager is doing in school	
F2P46C Credits teenager has toward graduation	
F2P46D Credits teenager needs to graduate	
<i>Knowledge of parents of teenager's friends</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 1.80 and explains 35.9% of variance ($\alpha = .55$).
F2P54B1 Knows parents of teenager's 1st friend	
F2P54B2 Knows parents of teenager's 2nd friend	
F2P54B3 Knows parents of teenager's 3rd friend	
F2P54B4 Knows parents of teenager's 4th friend	
F2P54B5 Knows parents of teenager's 5th friend	
Family norms	
<i>Family rules</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 1.84 and explains 46% of variance ($\alpha = .61$).
F1S100F Parents limit TV watching or video games	
F1S100G Parents limit time with friends	
F1S100D Parents limit privileges due to poor grades	
F1S100E Children required to work around the house	
<i>Educational expectations</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 1.84 and explains 46% of variance ($\alpha = .61$).
F2S42A How far in school father wants children to go	
F2S42B How far in school mother wants children to go	
F2S42C How far in school children think they will get	
F2P61 How far in school respondent expects teenager to go	
<i>Parent–teenager relationship</i>	A factor-weighted, standardized composite score. Factor has an eigenvalue of 1.67 and explains 55.7% of variance ($\alpha = .60$).
F2S100A Parents trust children to do what they expect	
F2S100D Children will be a source of pride to parents	
F2S100E Student's parents get along well with each other	

Notes. The italicized words are composites derived from the single indicators that are listed immediately below them. BY refers to base year; F1 represents first follow-up; F2 represents second follow-up. SAT = Scholastic Assessment Test; ACT = American College Test.

TABLE 2. Means and Standard Deviations of Student Background and Parent-Involvement Variables, by Race

Variable	Asian American		Hispanic American		African American		Caucasian American	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Student background								
Female	.46	.50	.50	.50	.48	.50	.50	.50
8th-grade mathematics	39.11	14.89	31.71*	12.44	28.63	12.64	38.02*	13.69
12th-grade mathematics	54.99	13.87	45.23*	13.49	39.69	14.36	51.49*	13.83
Family income	10.86	2.49	9.08*	2.44	8.76*	2.65	10.82	2.15
Parent education	3.76	1.43	2.62*	1.29	2.77*	1.00	3.31	1.19
Family obligations								
Participation in Parent-Teacher Organization activities	-.06	.99	-.13	.91	.01	.96	-.01	1.00
Attendance at school programs for teenagers	-.25	1.00	-.13	1.00	.07	1.01	.13	.95
Discussions about school topics with teenagers	-.25	1.17	-.20*	1.19	-.08	1.07	.02	.96
Parent information networks								
Contact with school about teenager's performance	-.26	.90	-.12	.98	.15*	1.05	-.02	.97
Knowledge of teenager's schoolwork	-.34	1.35	-.14*	1.15	-.04	.98	.08	.89
Knowledge of parents of teenager's friends	-.36	1.05	-.32*	1.08	-.08	1.03	.01	.97
Family norms								
Family rules	.09	1.05	.15	.98	.12	1.03	.00	.99
Educational expectations	.22	.90	-.08	1.04	-.10	1.02	-.06	1.00
Parent-teenager relationship	-.20	1.04	-.10	1.04	-.09	1.13	.01	1.01

Note. Means and standard deviation were computed with relative weights of National Education Longitudinal Study student weight.

* $p < .05$.

Relationships Between Family Social Capital and Mathematics Achievement

Table 3 shows the results of the OLS regressions of the degree of variation in the effects of parent involvement on 12th-grade mathematics by race and ethnicity. Among the three constructs examined, statistically significant differences occurred in the extent of involvement and mathematics achievement, and the results varied across four racial and ethnic groups. Consistent with previous research, the results demonstrated that parent involvement was generally more effective for Caucasian students than for minority students.

Effects of family obligations. The result from the first dimension indicates that family obligations have positively and statistically significant effects on 12th-grade mathematics achievement for Caucasian students. However, all three composites (participating in PTO activities, attending school programs, and discussing school topics) were not statistically significant. That was consistent with the finding that Caucasian parents might be more likely to participate in family-obligation activities, perhaps because they feel more confident (less communication barriers) and are more familiar with the jargon of the education systems (Lareau, 2001). That confidence transfers to the child to affect achievement (Phillips, 1992).

Effects of parent information networks. Among the three composite variables in parent-information networks, contacting school about teenagers' performance was associated

negatively with Caucasian and Asian students' mathematics achievement (see Muller, 1993; Singh et al., 1995). The finding might be explained by the common notion that parents tend to contact school more often when their teenagers are doing poorly. An alternative explanation is that contacting school about a teenager's performance causes negative outcomes by decreasing maturity growth or the development of independence and responsibility (Desimone, 1999). The second variable, knowing teenagers' schoolwork, was positively and statistically significant only for the Caucasian students. The third variable, knowing parents of teenagers' friends, positively predicted Caucasian and African American students' senior mathematics achievement.

Effects of family norms. We found that all racial and ethnic groups benefited from educational expectations; for all groups, this was the strongest predictor among the nine composites tested. Educational expectations was associated positively with mathematics achievement, ranging from standardized coefficients of .08 for African American students to .15 for Asian and Hispanic American students, and .24 for Caucasian students. The next important indicator was parent-teenager relationships, which had a predictive power of mathematics achievement for all groups except Hispanic students.

Findings indicate that parent involvement might be an effective means for Caucasian parents to promote their teenagers' mathematics achievement, particularly when these parents use the three family-obligation activities:

TABLE 3. Results of Ordinary Least Squares (OLS) Standardized Regression Coefficients

Parent-involvement composites	Caucasian American	Asian American	Hispanic American	African American
Family obligations				
Participation in Parent-Teacher Organization activities	.01**	-.07	-.02	.03
Attendance at school programs	.06**	.04	.03	.01
Discussions about school topics	.06**	-.03	.06	-.04
Adjusted R^2	.50	.55	.40	.61
Parent information networks				
Contact with school about teenager's performance	-.04**	-.12*	-.04	-.04
Knowledge of teenager's schoolwork	.02*	-.01	.01	-.02
Knowledge of parents of teenager's friends	.02*	-.01	-.01	.06*
Adjusted R^2	.47	.53	.36	.48
Family norms				
Family rules	-.00	-.00	.06	-.01
Educational expectations	.24**	.15**	.15**	.08*
Parent-teenager relationship	.05**	.10**	.02	.08*
Adjusted R^2	.51	.51	.43	.49

Note. OLS regression coefficients of the relationship between parent involvement and 12th-grade mathematics achievement, by race and ethnicity. All models control for female, 8th-grade mathematics, family income, and parent education. Results of these control variables are available from the first author.

* $p < .05$. ** $p < .01$.

(a) knowing teenagers' schoolwork and parents of teenagers' friends, (b) holding high parent educational expectations, and (c) enhancing parent-teenager relationships. For African American students, consistent with the literature, family involvement was not as powerful an explanation as it was for other students (Mickelson, 1990; Steinberg, Dornbusch, & Brown, 1992; Stevenson et al., 1990). However, that finding does not mean that parent involvement is not important for African American students. The positive relationship between the three family-obligation indicators and African American students' mathematics achievement provides evidence that some forms of parent involvement might improve African American students' mathematics achievement. For Asian parents, the most prominent indicators were educational expectations and parent-teenager relationships within the dimension of family norms. Consistent with the literature, many Asian American families held high expectations for their children's educational achievement, which positively influenced their children's expectations and attainments (Goyette & Xie, 1999; Lee, 1993).

Hispanic Americans' mathematics achievement was related to only one type of parent involvement (i.e., educational expectations). That finding was not surprising because it confirms results of other research (Klimes-Dougan et al., 1992; López & Cole, 1999). However, rather than interpreting the finding as indicating low levels of parent involvement (e.g., Hao & Bonstead-Brun, 1998), we tend to agree with the literature suggesting that Hispanic parents simply are not aware of ways to assist their children and that they may respect teachers and may not want to interfere with the

teachers' work (Rosado & Aaron, 1991). If those circumstances are the case, then policy makers and educators should design programs that give instruction and direction to Hispanic parents on how to help their children succeed in school (Christenson, Rounds, & Gorney, 1992; Rosado & Aaron). Our results suggest, on one hand, a conceptual link between social capital in the form of three dimensions of parent involvement and students' 12th-grade mathematics achievement, and, on the other hand, the diversity of family obligations, norms, and information networks that exist in American society.

Implications

Raising Parent Expectations and Increasing Parent-Child Interaction

Despite the differences in levels and forms of involvement among the three groups of students, a common factor is the tendency of adolescents to do well in school when their parents express high expectations for school achievement and conduct warm, nurturing, and frequent interactions with them. The importance of nurturing parent expectations and increasing parent-child interactions, therefore, cannot be overlooked. Although initially it seems that policy makers, school administrators, and teachers cannot perform or change that factor, another look reveals the possibility and importance of the roles of the educators in increasing students' educational expectations and improving parent-child relationships. Programs that increase students' expectations and anticipations can be

constructed and supported at all levels—from the local level (such as schools, community groups, and museums) to the national level.

Mentors, role models, community leaders, and speakers who may motivate students and raise their self-esteem, expectations, and sense of accountability are good examples of persons who might support student–parent relationships. Those examples, or role models, could help students realize that their high school achievement and future college attendance is part of a community pattern, preceded by earlier graduates and followed by others. Programs that increase parent–child learning interactions should express caring and engagement in the student’s learning on one hand and encourage a mix of learning interactions between the parent and the student on the other hand—from being involved with schoolwork to formal and informal extracurricular activities. The low-achieving, ethnic minority youth in college-preparation programs, traditionally stigmatized as “at-risk,” should be viewed as highly talented individuals who can achieve their goals. Educators should inform parents of at-risk students about the importance of the contributions of parents’ high educational expectations, helping these parents reach a high level of agreement between them and their children regarding these expectations in boosting the students’ mathematics achievement.

Raising parent expectations and increasing parent–teenager relationship are particularly important for 12th graders—adolescents who are at a critical age, a transitional stage from high school to postsecondary institutions. At that time, many students make critical decisions concerning their future, their value in society, and the meaning and philosophy of life. Although we found little statistical significance in some forms of parent involvement, growth in independence and autonomy means a different type of parent involvement. Growth in independence does not mean eliminating parent supports; rather, it means that parents should provide a different type of support (Singh et al., 1995), such as nurturing high educational expectations and facilitating increased learner responsibility. Therefore, schools might consider helping parents develop practical ways to convey higher aspirations to their junior and senior high school students, motivating students to work to meet the high expectations. Schools also might (a) provide clear guidelines for parents; (b) encourage parents to talk with their children about homework, school activities, and events; (c) help parents understand other parents; and (d) create new opportunities for positive parent involvement (Rafaele & Knoff, 1999; Singh et al., 1995).

Understanding Racial and Ethnic Differences and Restructuring Parent Education Programs

We provide positive support for parent involvement as a form of social capital that benefits adolescents’ mathematics achievement at the end of the high school year.

However, McNeal (1999) reported that, in many circumstances, the positive influences of social capital persist mainly for members of traditionally advantaged populations, namely, the Caucasian students. Although social capital is an intuitively appealing theory (Croninger & Lee, 2001), its effect on minority students’ achievement seems limited.

That finding also reveals the inequality that exists in society. It is difficult to compare the effects of involvement when one looks at the different resources available for minority (particularly Hispanic and African American) parents in comparison with Caucasian parents. There may be a wide variety of reasons that underlie lack of minority parents’ participation in education. For example, some parents might have experienced educational failure and, therefore, do not trust that teachers are concerned about their children’s best interests; other parents might feel disempowered by the perception that their cultural values are not accepted or affirmed by school personnel (Ritter, Mont-Reynaud, & Dornbusch, 1993). In addition, limited resources is a factor that should not be overlooked as a reason for minority parents’ lack of participation. Although minority parents hold high expectations for their children’s education and want to be actively involved, perhaps stressful life circumstances restrain their ability and availability (López et al. 2001).

Two recent studies, one on migrant families (López et al., 2001) and another on low-income working mothers (Weiss et al., 2003), call for a restructuring of parent education programs that apply traditional practices of parent involvement. The authors argued that the guidelines, materials, or training that the school gives parents to engage their children in school-like activities at home do not work for some disadvantaged families, such as migrant parents or low-income working mothers. Other practices, such as showing children of Mexican immigrants the fields where their parents work to emphasize the value of hard work might be a better form of parent involvement (López, 2001; Orellana, 2001). The implications of those studies, and our study, is that there is no reason to believe that minority parents’ involvement in their children’s schooling is similar to Caucasian parents’ involvement, either in terms of patterns of involvement or level of effectiveness.

Suggestions for Future Studies

As a theoretical explanation for adolescents’ parent involvement and academic development, social capital remains largely underdeveloped. Demonstrating the effects of three dimensions of parent involvement and their racial and ethnic variations with NELS data represents only a beginning. Additional work is required for researchers and educators to understand more fully the (a) nature of the involvement from social networks that can benefit students, (b) effects of these resources on adolescent development, (c) incentives for accessing these resources for various populations of students, and (d) fac-

tors that encourage parents of various racial and ethnic backgrounds to provide support and assistance to students. Furthermore, parent involvement practices occur in a range of social contexts, which vary from school or institution, family, and a range of community and socioeconomic contexts. Successful partnerships require the cooperation and collaboration of home, school, and community (Epstein, 1992, 1996), where a model of social capital might be developed. The extent to which the interplay of those relationships is exerted on student achievement remains to be established.

NOTE

1. This also applies to non-kinship-based households. A great majority of non-kinship-based households (adoption and foster care) can be characterized as having a sense of family or unity that lends an element of influence to the relationship between parent or guardian and child.

REFERENCES

- Bandura, A. (1977). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.
- Bourdieu, P. (1993). *Sociology in question*. New York: Sage.
- Carbonaro, W. J. (1999). Opening the debate on closure and school outcomes: Comment on Morgan and Sorensen. *American Sociological Review*, 64, 687-693.
- Casanova, U. (1996). Parent involvement: A call for prudence. *Educational Researcher*, 25, 30-32, 46.
- Chavkin, N. F., & Williams, D. L. (1993). Minority parents and the elementary school: Attitudes and practices. In N. F. Chavkin (Ed.), *Families and schools in a pluralistic society* (pp. 73-119). Albany: SUNY Press.
- Chen, C., & Stevenson, H. W. (1995). Motivation and mathematics achievement: A comparative study of Asian-American, Caucasian-American and East Asian high school students. *Child Development*, 66, 1215-1234.
- Christenson, S. L., Rounds, T., & Gorney, D. (1992). Family factors and student achievement: An avenue to increase students' success. *School Psychology Quarterly*, 7, 178-206.
- Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94, 95-120.
- Coleman, J. S. (1990). *Foundations of social theory*. Cambridge, MA: Harvard University Press.
- Coleman, J. S. (1992). Some points on choice in education. *Sociology of Education*, 65, 260-262.
- Coleman, J. S. (1997). Family, school and social capital. In L. J. Saha (Ed.), *International encyclopedia of the sociology of education* (pp. 623-625). Oxford, England: Pergamon.
- Coleman, J. S., & Hoffer, T. (1987). *Public and private schools: The impact of communities*. New York: Basic Books.
- Croninger, R. G., & Lee, V. E. (2001). Social capital and dropping out of high school: Benefits to at-risk student of teachers' support and guidance. *Teachers College Record*, 103, 548-581.
- Darling, N., & Steinberg, L. (1993). Parenting style as context: An integrative model. *Psychological Bulletin*, 113, 487-496.
- de Carvalho, M. E. P. (2001). *Rethinking family-school relations: A critique of parental involvement in schooling*. Mahwah, NJ: Erlbaum.
- Desimone, L. (1999). Linking parent involvement with student achievement: Do race and income matter? *The Journal of Educational Research*, 93, 11-31.
- Dika, S. L., & Singh, K. (2002). Applications of social capital in educational literature: A critical synthesis. *Review of Educational Research*, 72, 31-60.
- Eccles, J. S., & Harold, R. D. (1996). Family involvement in children's and adolescents' schooling. In A. Booth & J. F. Dunn (Eds.), *Family school links: How do they affect educational outcomes?* (pp. 3-34). Mahwah, NJ: Erlbaum.
- Ensminger, M. E., & Slusarcick, A. L. (1992). Paths to high school graduation or dropout: A longitudinal study of a first-grade cohort. *Sociology of Education*, 65, 95-113.
- Epstein, J. (1991). Effects on student achievement of teachers' practices of parent involvement. *Advances in Reading/Language Research*, 5, 261-276.
- Epstein, J. (1992). School and family partnerships. In M. C. Alkin (Ed.), *Encyclopedia of educational research* (6th ed., pp. 1139-151). New York: Macmillan.
- Epstein, J. L. (1996). Federal education legislation: Implications for school, family, and community connections. In K. M. Borman, P. W. Cookson, Jr., A. R. Sadovnik, & J. Z. Spade (Eds.), *School dropouts: Patterns and policies* (pp. 89-105). New York: Teachers College Press.
- Fehemann, P. G., Keith, T. Z., & Reimers, T. M. (1987). Home influences on school learning: Direct and indirect effects of parental involvement on high school grades. *The Journal of Educational Research*, 80, 330-337.
- Feuerstein, A. (2000). School characteristics and parent involvement: Influences on participation in children's schools. *The Journal of Educational Research*, 94, 29-39.
- Goyette, K., & Xie, Y. (1999). Educational expectations of Asian American youths: Determinants and ethnic differences. *Sociology of Education*, 72, 22-36.
- Hallinan, M. T., & Kubitschek, W. K. (1999). Conceptualizing and measuring school social networks: Comment on Morgan and Sorensen. *American Sociological Review*, 64, 687-693.
- Hanson, S. L. (1994). Lost talent: Unrealized educational aspirations and expectations among U.S. youths. *Sociology of Education*, 67, 159-183.
- Hao, L., & Bonstead-Bruns, M. (1998). Parents' extrafamilial resources and children's school attainment. *Sociology of Education*, 71, 175-198.
- Hedges, J. P., & Nowell, A. (1999). Changes in the Black-White gap in test scores. *Sociology of Education*, 72, 111-135.
- Henderson, A. T., Marburger, C. L., & Ooms, T. (1986). *Beyond the bake sale: An educator's guide to working with parents*. Columbia, MD: The National Committee for Citizens in Education.
- Henry, M. (1996). *Parent-school collaboration: Feminist organizational structures and school leadership*. Albany: State University of New York Press.
- Heystek, J. (2003). *Parents as governors and partners in schools*. *Education and Urban Society*, 35, 328-315.
- Hoover-Dempsey, K. V., Bassler, O. C., & Burrow, R. (1987). Parent involvement: Contributions of teacher efficacy, school socioeconomic status, and other school characteristics. *American Educational Research Journal*, 24, 417-425.
- Hoover-Dempsey, K. V., Bassler, O. C., & Burrow, R. (1995). Parents' reported involvement in students' homework: Strategies and practices. *The Elementary School Journal*, 95, 435-450.
- Hurh, W. M., & Kim, K. C. (1989). The "success" image of Asian Americans: Its validity, and its practical and theoretical implications. *Ethnic and Racial Studies*, 12, 512-538.
- Ingels, S. J., Abraham, S. Y., Rasinski, K. A., Karr, R., Spencer, B. D., & Frankel, M. R. (1990). *National Education Longitudinal Study of 1988, base year: Parent components data file user's manual*. Washington, DC: National Center for Education Statistics.
- Jeynes, W. (2003). A meta-analysis: The effects of parental involvement on minority children's academic achievement. *Education and Urban Society*, 35, 202-223.
- Kao, G. (1995). Asian Americans as model minorities? A look at their academic performance. *American Journal of Education*, 103, 121-159.
- Keith, P. B., & Lichtman, M. (1992, April). *Testing the influences of parental involvement on Mexican-American eighth grade students' academic achievement: A structural equations analysis*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco.
- Klimes-Dougan, B., López, J. A., Nelson, P., & Adelman, H. S. (1992). Two studies of low-income parents' involvement in schooling. *The Urban Review*, 24, 185-202.
- Lareau, A. (2001). Linking Bourdieu's concept of capital to the broader field: The case of family-school relationships. In B. J. Biddle (Ed.), *Social class, poverty, and education: Policy and practice* (pp. 77-100). New York: Routledge Falmer.
- Lareau, A., & Horvat, E. M. (1999). Moments of social inclusion and exclusion: Race, class, and cultural capital in family-school relationships. *Sociology of Education*, 72(1), 37-53.
- Lee, S. (1993). Family structure effects on student outcomes. In B. Schneider & J. S. Coleman (Eds.), *Parents, their children, and schools* (pp. 43-75). Boulder, CO: Westview Press.
- López, A., & Cole, C. L. (1999). Effects of a parent-implemented intervention on the academic readiness skills of five Puerto Rican kindergarten students in an urban school. *School Psychology Review*, 28, 439-477.

- López, G. R., Scribner, J. D., & Mahitivanichcha, K. (2001). Redefining parental involvement: Lessons from high-performing migrant-impacted schools. *American Educational Research Journal*, 38, 253-288.
- Ma, X. (1997). Dropping out of advanced mathematics: The effects of parental involvement. *Teachers College Record*, 98, 61-80.
- Mau, W. (1997). Parental influences on the high school students' academic achievement: A comparison of Asian immigrants, Asian Americans, and White Americans. *Psychology in the Schools*, 34, 267-277.
- McNeal, R. B., Jr. (1999). Parental involvement as social capital: Differential effectiveness on science achievement, truancy, and dropping out. *Social Forces*, 78, 117-144.
- Mickelson, R. (1990). The attitude-achievement paradox among black adolescents. *Sociology of Education*, 63, 44-61.
- Moles, O. C. (1993). Collaboration between schools and disadvantaged parents: Obstacles and openings. In N. F. Chavkin (Ed.), *Families and schools in a pluralistic society* (pp. 21-52). Albany: SUNY Press.
- Moll, L. C. (1992). Bilingual classroom studies and community analysis: Some recent trends. *Educational Researcher*, 20, 20-24.
- Morgan, S. L., & Sorensen, A. B. (1999). Parental networks, social closure, and mathematics learning: A test of Coleman's social capital. *American Sociological Review*, 64, 682-686.
- Muller, C. (1993). Parent involvement and academic achievement: An analysis of family resources available to the child. In B. Schneider & J. S. Coleman (Eds.), *Parents, their children, and schools* (pp. 77-114). Boulder, CO: Westview Press.
- Muller, C. (1995). Maternal employment, parent involvement, and mathematics achievement among adolescents. *Journal of Marriage & the Family*, 57(1), 12-23.
- Muller, C. (1998). Gender differences in parental involvement and adolescents' mathematics achievement. *Sociology of Education*, 71, 336-335.
- Orellana, M. J. (2001). The work kids do: Mexican and Central American immigrant children's contributions to household and schools in California. *Harvard Educational Review*, 71, 366-389.
- Paratore, J. R., & Hindin, A. (1999). Discourse between teachers and Latino parents during conferences based on home literacy portfolios. *Education & Urban Society*, 32, 58-83.
- Parcel, R. L., & Dufur, M. J. (2001). Capital at home and at school: Effects on student achievement. *Social Forces*, 79, 881-912.
- Péna, D. (2000). Parent involvement: Influencing factors and implications. *The Journal of Educational Research*, 94, 42-53.
- Phillips, L. (1992, April). *Parent involvement: Relationships of expectations, goals, and activities to student achievement among minority, socioeconomic, and gender groups*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Pong, S. L. (1997). Family structure, school context, and eighth-grade math and reading achievement. *Journal of Marriage & the Family*, 59, 734-747.
- Raffaele, L. M., & Knoff, H. M. (1999). Improving home-school collaboration with disadvantaged families: Organizational principles, perspectives and approaches. *School Psychology Review*, 28, 448-446.
- Ritter, P. L., Mont-Reynaud, R., & Dornbusch, S. M. (1993). Minority parents and their youth: Concern, encouragement, and support for school achievement. In N. F. Chavkin (Ed.), *Families and schools in a pluralistic society* (pp. 107-119). Albany: SUNY Press.
- Rodríguez-Brown, F. V., Li, R. F., & Albom, J. B. (1999). Hispanic parents' awareness and use of literacy-rich environments at home and in the community. *Education and Urban Society*, 32, 41-58.
- Rosado, L. A., & Aaron, E. B. (1991). Parental involvement: Addressing the educational needs of Hispanic inner-city parents. *The Journal of Educational Issues of Language Minority Students*, 8, 23-29.
- Sanders, M. (1997). Overcoming obstacles: Academic achievement as a response to racism and discrimination. *Journal of Negro Education*, 66(1), 83-93.
- Schneider, B., & Coleman, J. S. (Eds.). (1993). *Parents, their children, and schools*. San Francisco: Westview Press.
- Schneider, B., & Lee, Y. (1990). A model for academic success: The school and home environment of East Asian students. *Anthropology & Education Quarterly*, 21, 358-377.
- Scott-Jones, D. (1995). Parent-child interactions and school achievement. In Ryan et al. (Eds.), *The family-school connections: Theory, research and practice* (pp.75-107). Thousand Oaks, CA: Sage.
- Sheldon, S. B. (2003). Linking school-family-community partnerships in urban elementary schools to student achievement on state tests. *Urban Review*, 35, 149-158.
- Singh, K., Bickley, P. G., Trivette, P., Keith, T. Z., Keith, P., & Anderson, E. (1995). The effects of four components of parental involvement on eighth-grade student achievement: Structural analysis of NELS:88 data. *School Psychology Review*, 24, 299-317.
- Smrekar, C. (1996). *The impact of school choice and community: In the interest of families and schools*. Albany: State University of New York Press.
- Stanton-Salazar, R. D. (1997). A social capital framework for understanding the socialization of racial minority children and youths. *Harvard Educational Review*, 67(1), 1-40.
- Stanton-Salazar, R. D. (2001). *Manufacturing hope and despair: The school and kin support networks of U.S.-Mexican youth*. New York: Teachers College Press.
- Steinberg, L., Dornbusch, S. M., & Brown, B. B. (1992). Ethnic differences in adolescent achievement: An ecological perspective. *American Psychologist*, 47, 723-729.
- Stevenson, D. L., & Baker, D. P. (1987). The family-school relation and the child's school performance. *Child Development*, 58, 1348-1357.
- Stevenson, H. W., Chen, C., & Lee, S. Y. (1993). Mathematics achievement of Chinese, Japanese, and American children: Ten years later. *Science*, 259, 53-58.
- Stevenson, H. W., Chen, C., & Uttal, D. H. (1990). Beliefs and achievement: A study of black, white, and Hispanic children. *Child Development*, 61, 508-523.
- Sui-Chu, E. H., & Willms, J. D. (1996). Effects of parent involvement on eighth-grade achievement. *Sociology of Education*, 69, 126-141.
- Trusty, J. (1996). Relationship of parental involvement in teenagers' career development to teenagers' attitudes, perceptions, and behavior. *Journal of Research and Development in Education*, 30, 63-69.
- Trusty, J. (1998). Family influences on educational expectations of late adolescents. *The Journal of Educational Research*, 91, 260-270.
- Trusty, J. (2000). High educational expectations and low achievement: Stability of educational goals across adolescence. *The Journal of Educational Research*, 93, 356-365.
- Trusty, J. (2002). African Americans' educational expectations: Longitudinal causal models for women and men. *Journal of Counseling & Development*, 80, 332-345.
- Trusty, J., & Harris, M. B. C. (1999). Lost talent: Predictors of the stability of educational expectations across adolescence. *Journal of Adolescent Research*, 14, 359-382.
- Trusty, J., Plata, M., & Salazar, C., F. (2003). Modeling Mexican Americans' educational expectations: Longitudinal effects of variables across adolescence. *Journal of Adolescent Research*, 18, 131-142.
- Weiss, H. B., Mayer, E., Kreider, H., Vaughan, M., Dearing, E., Hencke, R., et al. (2003). Making it work: Low-income working mothers' involvement in their children's education. *American Educational Research Journal*, 40, 879-904.
- Yan, W. (2000). Successful African American students: The role of parental involvement. *Journal of Negro Education*, 68(1), 5-21.

HAIRUL N. ISMAIL is a senior lecturer/assistant professor, School of Educational Studies, University Sains Malaysia. He teaches educational psychology (learning and cognition), developmental psychology, and instructional technology. He also supervises graduate students and conducts research in those areas. **JOYCE M. ALEXANDER** is an associate professor, Indiana University. She teaches courses in motivation and children's cognition. Her research interests involve growth strategies, knowledge, and motivation, especially in high-interest domains.

XIN MA is an associate professor, Department of Curriculum and Instruction, University of Kentucky. His research interests include mathematics education, school effects, policy analysis, and quantitative methods.

ANGELA LOVE is an assistant professor, Elementary and Early Childhood Education Department, Queens College—City University of New York. Her research interests are in teachers' beliefs related to culturally relevant teaching and teacher candidates' developing philosophies regarding teaching, learning, and aesthetic education. Her research is also focused on the writing, discourse, and literacy development of young children living in poverty, and on pretend play. **ANN CALE KRUGER** is an associate professor, Department of Educational Psychology and Special Education, Georgia State University. Her interests include development of social cognition in children, the role of peer interaction in the construction of knowledge, and connections between discourse, relationship, and intellect in the process of enculturation.

ELLEN MCINTYRE is a professor, Department of Teaching and Learning, College of Education, University of Louisville, Kentucky. She is interested in issues of equity as they relate to classroom instruction and literacy development. **JOE PETROSKO** is a professor and chairperson, College of Education, University of Louisville. His research interests include statistics, program evaluation, assessment, and accountability for

K–12 education. **DENESE JONES** is an associate professor in the same department. Her research interests include equity pedagogy in literacy instruction and issues of diversity in higher education administration. **REBECCA POWELL** is a professor of education, Georgetown College, Kentucky. She holds the Marjorie Bauer Endowed Chair and teaches undergraduate and graduate courses in multicultural and literacy education. **SHERRY POWERS** is an associate professor and department head of Special Instructional Programs, College of Education and Behavioral Sciences, Western Kentucky University. She is interested in teacher discourse and equitable pedagogy in relation to the impact that each has on student learning. **KELLY BRIGHT** is a research associate, National Center for Family Literacy, Louisville, Kentucky. Her research interests include family literacy and program evaluation. **FAYE NEWSOME** is an associate professor and associate chair of curriculum and instruction, Eastern Kentucky University. Her work interests include early literacy, content literacy instruction, and alternative teacher certification.

JO ANN LEE is an associate professor of industrial and organizational psychology, University of North Carolina at Charlotte. She is chair of the executive board of the Council of Applied Master's Programs of Psychology. Her research interests include special problems facing older workers, personnel selection, work/family issues, and legal regulations of employment practices. **PATRICIA ELLEN BUSCH** is a graduate of the master's program at the University of North Carolina at Charlotte.

WENFAN YAN is a professor, Department of Professional Studies in Education, Indiana University of Pennsylvania. His research interests include quantitative policy analysis and research methods. His recent research focuses on the effects of parent involvement and cultural diversity on teaching and learning. **QIUYUN LIN** is an assistant professor, Education Department, Mount Aloysius College, Pennsylvania. Her recent interests include school effectiveness, parent involvement, and quantitative analysis of the national database.